

## SEQUENCE LISTING

<110> Fowlkes, Dana M.  
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Paul, Jeremy  
Trueheart, Joshua

<120> YEAST CELLS ENGINEERED TO PRODUCE PHEROMONE SYSTEM  
PROTEIN SURROGATES, AND USES THEREFOR

<130> CPI-012CP4BCN

<140> 09/286,166

<141> 1999-04-05

<150> 08/322,137

<151> 1994-10-13

<150> 08/309,313

<151> 1994-09-20

<150> 08/190,328

<151> 1994-01-31

<150> 08/041,431

<151> 1993-03-31

<160> 133

<170> PatentIn Ver. 2.0

<210> 1

<211> 89

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 1

Met Arg Phe Pro Ser Ile Phe Thr Ala Val Leu Phe Ala Ala Ser Ser  
1 5 10 15

Ala Leu Ala Ala Pro Val Asn Thr Thr Thr Glu Asp Glu Thr Ala Gln  
20 25 30

Ile Pro Ala Glu Ala Val Ile Gly Tyr Leu Asp Leu Glu Gly Asp Phe  
35 40 45

Asp Val Ala Val Leu Pro Phe Ser Asn Ser Thr Asn Asn Gly Leu Leu  
50 55 60

Phe Ile Asn Thr Thr Ile Ala Ser Ile Ala Ala Lys Glu Glu Gly Val  
65 70 75 80

Ser Leu Asp Lys Arg Glu Ala Glu Ala  
85

<210> 2

<211> 76

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 2

Trp His Trp Leu Gln Leu Lys Pro Gly Gln Pro Met Tyr Lys Arg Glu  
1 5 10 15

Ala Glu Ala Glu Ala Trp His Trp Leu Gln Leu Lys Pro Gly Gln Pro  
20 25 30

Met Tyr Lys Arg Glu Ala Asp Ala Glu Ala Trp His Trp Leu Gln Leu  
35 40 45

Lys Pro Gly Gln Pro Met Tyr Lys Arg Glu Ala Asp Ala Glu Ala Trp  
50 55 60

His Trp Leu Gln Leu Lys Pro Gly Gln Pro Met Tyr  
65 70 75

&lt;210&gt; 3

&lt;211&gt; 15

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Synthetic  
sequence

&lt;400&gt; 3

aagcttaaaa gaatg

15

&lt;210&gt; 4

&lt;211&gt; 37

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(24)

&lt;220&gt;

<223> Description of Artificial Sequence: Synthetic  
sequence

&lt;400&gt; 4

aaa gaa gaa ggg gta tct ttg ctt aagctcgaga tct  
Lys Glu Glu Gly Val Ser Leu Leu  
1 5

37

&lt;210&gt; 5

&lt;211&gt; 8

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Synthetic  
sequence

&lt;400&gt; 5

Lys Glu Glu Gly Val Ser Leu Leu  
1 5

&lt;210&gt; 6

&lt;211&gt; 77

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (29)..(66)

&lt;223&gt; Any occurrences of n may be any nucleotide

&lt;220&gt;

<223> Description of Artificial Sequence: Synthetic  
sequence

&lt;400&gt; 6

cgtgaagctt aagcgtgagg cagaagctnn knknknknknkn nnknknknknkn nkknknknknkn 60

knnknknktga tcattccg

77

&lt;210&gt; 7

&lt;211&gt; 19

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;221&gt; VARIANT

&lt;222&gt; (7)..(19)

&lt;223&gt; Any occurrences of Xaa may be any amino acid

&lt;220&gt;

<223> Description of Artificial Sequence: Synthetic  
sequence

&lt;400&gt; 7

Lys Arg Glu Ala Glu Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15

Xaa Xaa Xaa

&lt;210&gt; 8

&lt;211&gt; 36

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 8

Met Gln Pro Ser Thr Ala Thr Ala Ala Pro Lys Glu Lys Thr Ser Ser  
1 5 10 15Glu Lys Lys Asp Asn Tyr Ile Ile Lys Gly Val Phe Trp Asp Pro Ala  
20 25 30Cys Val Ile Ala  
35

<210> 9  
<211> 19  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 9  
aagctttcga atagaaatg

19

<210> 10  
<211> 36  
<212> DNA  
<213> Artificial Sequence

<220>  
<221> CDS  
<222> (1)..(27)

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 10  
gcc gct cca aaa gaa aag acc tcg agc tcgcttaag  
Ala Ala Pro Lys Glu Lys Thr Ser Ser  
1 5

36

<210> 11  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 11  
Ala Ala Pro Lys Glu Lys Thr Ser Ser  
1 5

<210> 12  
<211> 79  
<212> DNA  
<213> Artificial Sequence

<220>  
<221> misc\_feature  
<222> (27)..(58)  
<223> Any occurrences of n may be any nucleotide

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 12  
gggtactcgag tgaaaagaag gacaacnnkn nknnknnknn knnknnknkn nnknnknnkt 60  
gtgttattgc ttaagtacg 79

<210> 13  
<211> 22  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> VARIANT  
<222> (8)..(18)  
<223> Any occurrences of Xaa may be any amino acid

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 13  
Ser Ser Glu Lys Lys Asp Asn Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5 10 15  
Xaa Xaa Cys Val Ile Ala  
20

<210> 14  
<211> 34  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 14  
gttaagaacc atatactagt atcaaaaatg tctg 34

<210> 15  
<211> 35  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 15  
tgatcaaat ttactagttt gaaaaagtaa tttcg 35

<210> 16  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 16

ggcaaaatac tagtaaaatt ttcatgtc

28

<210> 17

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 17

ggcccttaac acactagtgt cgcattatat ttac

34

<210> 18

<211> 60

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 18

ctaaagaaga aggggtatct ttgcttaagc tcgagatctc gactgataac aacagtgtag 60

<210> 19

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 19

catacacaat ataaagcttt aaaagaatga g

31

<210> 20

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 20

gctacttaag cgtgaggcag aagct

25

<210> 21

<211> 10

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 21

cggatgatca

10

<210> 22

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 22

ccaaaataag tacaaagctt tcgaatagaa atgcaaccat c

41

<210> 23

<211> 59

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 23

gccgctccaa aagaaaagac ctcgagctcg cttaagttct gcgtacaaaa acgttggtc 59

<210> 24

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 24

ggtactcgag tgaaaagaag gacaac

26

<210> 25

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 25

cgtacttaag caataacaca

20

<210> 26  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 26  
cgtgaagctt. aagcgtgagg cagaagct

28

<210> 27  
<211> 57  
<212> DNA  
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<220>  
<221> misc\_feature  
<222> (12)..(49)  
<223> Any occurrences of n may be any nucleotide

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 27  
cggatgatca mnnnnnnnnnn nnnnnnnnnn nnnnnnnnnn mnnnnnnnnna gcttctg

57

<210> 28  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 28  
ggtactcgag tgaaaagaag gacaac

26

<210> 29  
<211> 60  
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<220>  
<221> misc\_feature  
<222> (22)..(53)  
<223> Any occurrences of n may be any nucleotide

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 29



cgtacttaag caataacaca mnnmnnmnm nnnmnnmnm nnnmnnmnm mnnngttgtcc 60

<210> 30

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 30

gggaagctta tgccgagatc gtgctgccag ccgc

34

<210> 31

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 31

ggggaagact tctgccctgc gccgctgctg cc

32

<210> 32

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 32

ggggaagacc cgaggaggc agaagcttgg ttgcag

36

<210> 33

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 33

gggagatctt cagtacattg gttggcc

27

<210> 34

<211> 32

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 34

Arg Asn Ser Ser Ser Ser Gly Ser Ser Gly Ala Gly Gln Lys Arg Glu  
1 5 10 15

Ala Glu Ala Trp His Trp Leu Gln Leu Lys Pro Gly Gln Pro Met Tyr  
20 25 30

<210> 35

<211> 29

<212> DNA

<213> Homo sapiens

<400> 35

ccgcgtctca catgcccaag aagaagccg

29

<210> 36

<211> 24

<212> DNA

<213> Homo sapiens

<400> 36

ccgtctagat gctggcagcg tggg

24

<210> 37

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 37

ttaagcgtga ggcagaagct tatcgata

28

<210> 38

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 38

cgcactccgt cttcgaatag ctatctag

28

<210> 39

<211> 71

<212> DNA

<213> Artificial Sequence

<220>

<221> misc\_feature

<222> (19)..(53)

<223> Any occurrences of n may be any nucleotide

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 39

ctggatgcga agacagctnn kknknknknk nnknknknkn nkknknknkn knnktgatca 60

gtctgtgacg c

71

<210> 40

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 40

gcgtcacaga ctgatca

17

<210> 41

<211> 56

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 41

gccgtcagta aagcttggca ttggttgacg cctatgtact gatcagtctg tgacgc 56

<210> 42

<211> 39

<212> DNA

<213> Saccharomyces cerevisiae

<220>

<221> CDS

<222> (1)..(39)

<400> 42

tgg cat tgg ttg cag cta aaa cct ggc caa cca atg tac 39

Trp His Trp Leu Gln Leu Lys Pro Gly Gln Pro Met Tyr

1

5

10

<210> 43

<211> 13

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 43

Trp His Trp Leu Gln Leu Lys Pro Gly Gln Pro Met Tyr  
1 5 10

<210> 44

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 44

ctggatgcga agactcagct

20

<210> 45

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 45

cggatgatca gtacattggt tggccagggt ttagctgcaa ccaatgccaa gctgagtctt 60

cgcattccag

69

<210> 46

<211> 39

<212> DNA

<213> *Saccharomyces cerevisiae*

<220>

<221> CDS

<222> (1)..(39)

<400> 46

tgg cat tgg cta cag cta acg cct ggg caa cca atg tac  
Trp His Trp Leu Gln Leu Thr Pro Gly Gln Pro Met Tyr  
1 5 10

39

<210> 47

<211> 13

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 47

Trp His Trp Leu Gln Leu Thr Pro Gly Gln Pro Met Tyr  
1 5 10

<210> 48

<211> 39  
<212> DNA  
<213> *Saccharomyces cerevisiae*

<220>  
<221> CDS  
<222> (1)..(39)

<400> 48  
tgg cat tgg ctg gag ctt atg cct ggc caa cca tta tac 39  
Trp His Trp Leu Glu Leu Met Pro Gly Gln Pro Leu Tyr  
1 5 10

<210> 49  
<211> 13  
<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 49  
Trp His Trp Leu Glu Leu Met Pro Gly Gln Pro Leu Tyr  
1 5 10

<210> 50  
<211> 39  
<212> DNA  
<213> *Saccharomyces cerevisiae*

<220>  
<221> CDS  
<222> (1)..(39)

<400> 50  
tgg cat tgg atg gag cta aga cct ggc caa cca atg tac 39  
Trp His Trp Met Glu Leu Arg Pro Gly Gln Pro Met Tyr  
1 5 10

<210> 51  
<211> 13  
<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 51  
Trp His Trp Met Glu Leu Arg Pro Gly Gln Pro Met Tyr  
1 5 10

<210> 52  
<211> 33  
<212> DNA  
<213> Artificial Sequence

<220>  
<221> CDS  
<222> (1)..(33)

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

&lt;400&gt; 52

tat gct ctg ttt gtt cat ttt ttt gat att ccg  
Tyr Ala Leu Phe Val His Phe Phe Asp Ile Pro  
1 5 10

33

&lt;210&gt; 53

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;400&gt; 53

Tyr Ala Leu Phe Val His Phe Phe Asp Ile Pro  
1 5 10

&lt;210&gt; 54

&lt;211&gt; 33

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(33)

&lt;220&gt;

<223> Description of Artificial Sequence: Synthetic  
sequence

&lt;400&gt; 54

ttt aag ggt cag gtg cgt ttt gtg gtt ctt gct  
Phe Lys Gly Gln Val Arg Phe Val Val Leu Ala  
1 5 10

33

&lt;210&gt; 55

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Synthetic  
sequence

&lt;400&gt; 55

Phe Lys Gly Gln Val Arg Phe Val Val Leu Ala  
1 5 10

&lt;210&gt; 56

&lt;211&gt; 33

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(33)

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Synthetic

## sequence

&lt;400&gt; 56

ctt atg tct ccg tct ttt ttt ttt ttg cct gcg  
Leu Met Ser Pro Ser Phe Phe Phe Leu Pro Ala  
1 5 10

33

&lt;210&gt; 57

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Synthetic  
sequence

&lt;400&gt; 57

Leu Met Ser Pro Ser Phe Phe Phe Leu Pro Ala  
1 5 10

&lt;210&gt; 58

&lt;211&gt; 27

&lt;212&gt; DNA

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 58

cgggatccga tgcaattttc aacatgc

27

&lt;210&gt; 59

&lt;211&gt; 23

&lt;212&gt; DNA

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 59

gctctagatg ctactgatcc cgc

23

&lt;210&gt; 60

&lt;211&gt; 18

&lt;212&gt; DNA

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 60

cgccgcatga ctccattg

18

&lt;210&gt; 61

&lt;211&gt; 26

&lt;212&gt; DNA

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 61

ggggtaccaa taggttcttt cttagg

26

&lt;210&gt; 62

&lt;211&gt; 35

&lt;212&gt; DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 62

ggtgggaggg tgctctctag aaggaagtgt tcacc

35

<210> 63

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 63

gcccaggaga ccagaccatg gactccttca attataccac c

41

<210> 64

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 64

ccccttaagc gtgaggcaga agctactctg caaaagaaga tc

42

<210> 65

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 65

gaagatcttc agcggccgag ttgcatgtc

29

<210> 66

<211> 38

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 66

gatatattaa ggtaggaaac catggggtgt acagtgag

38



<210> 67  
<211> 34  
<212> DNA  
<213> *Saccharomyces cerevisiae*

<400> 67  
cgagcgctcg agggaaacgta taattaaagt agtg

34

<210> 68  
<211> 34  
<212> DNA  
<213> *Saccharomyces cerevisiae*

<400> 68  
gcgcggtacc aagcttcaat tcgagataat accc

34

<210> 69  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 69  
cccgaatcca ccaatttctt tacg

24

<210> 70  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 70  
gcggcgctcga cgcggcgcgcg taacagt

27

<210> 71  
<211> 37  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 71  
ctgctggagc tccgcctgct gctgctgggt gctggag

37

<210> 72  
<211> 43  
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 72

ctgctggtcg acgcggccgc gggggttcct tcttagaagc agc

43

<210> 73

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 73

gggctcgagc cttcttagag cagctcgtag

30

<210> 74

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 74

ctgctggagc tcaagttgct gctgttgggt gctgggg

37

<210> 75

<211> 44

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 75

ctgctggtcg acgcggccgc gccctcaga agaggccgcg gtcc

44

<210> 76

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic sequence

<400> 76

gggctcgagc ctcagaagag gccgcagtc

29

<210> 77

<211> 37

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 77

ctgctggagc tcaagctgct gctactcggt gctggag

37

<210> 78

<211> 49

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 78

ctgctggtcg acgcggccgc cactaacatc catgcttctc aataaagtc

49

<210> 79

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 79

gggctcgagc atgcttctca ataaagtcca c

31

<210> 80

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 80

gcattcatca ataattccag

19

<210> 81

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 81  
gaaacaatgg atccacttct tac

23

<210> 82  
<211> 66  
<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 82  
Met Gly Cys Thr Val Ser Thr Gln Thr Ile Gly Asp Glu Ser Asp Pro...  
1 5 10 15  
Phe Leu Gln Asn Lys Arg Ala Asn Asp Val Ile Glu Gln Ser Leu Gln  
20 25 30  
Leu Glu Lys Gln Arg Asp Lys Asn Glu Ile Lys Leu Leu Leu Gly  
35 40 45  
Ala Gly Glu Ser Gly Lys Ser Thr Val Leu Lys Gln Leu Lys Leu Leu  
50 55 60  
His Gln  
65

<210> 83  
<211> 65  
<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 83  
Met Gly Cys Leu Gly Thr Ser Lys Thr Glu Asp Gln Arg Asn Glu Glu  
1 5 10 15  
Lys Ala Gln Arg Glu Ala Asn Lys Lys Ile Glu Lys Gln Leu Gln Lys  
20 25 30  
Asp Lys Gln Val Tyr Arg Ala Thr His Arg Leu Leu Leu Leu Gly Ala  
35 40 45  
Gly Glu Ser Gly Lys Ser Thr Ile Val Lys Gln Met Arg Ile Leu His  
50 55 60  
Val  
65

<210> 84  
<211> 58  
<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 84  
Met Gly Cys Thr Val Ser Ala Glu Asp Lys Ala Ala Ala Glu Arg Ser  
1 5 10 15  
Lys Met Ile Asp Lys Asn Leu Arg Glu Asp Gly Glu Lys Ala Ala Arg  
20 25 30

Glu Val Lys Leu Leu Leu Leu Gly Ala Gly Glu Ser Gly Lys Ser Thr  
35 40 45

Ile Val Lys Gln Met Lys Ile Ile His Glu  
50 55

&lt;210&gt; 85

&lt;211&gt; 58

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 85

Met Gly Cys Thr Val Ser Ala Glu Asp Lys Ala Ala Val Glu Arg Ser  
1 5 10 15

Lys Met Ile Asp Arg Asn Leu Arg Glu Asp Gly Glu Lys Ala Ala Lys  
20 25 30

Glu Val Lys Leu Leu Leu Leu Gly Ala Gly Glu Ser Gly Lys Ser Thr  
35 40 45

Ile Val Lys Gln Met Lys Ile Ile His Glu  
50 55

&lt;210&gt; 86

&lt;211&gt; 67

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 86

Met Ala Arg Ser Leu Thr Trp Arg Cys Cys Pro Trp Cys Leu Thr Glu  
1 5 10 15

Asp Glu Lys Ala Ala Ala Arg Val Asp Gln Glu Ile Asn Arg Ile Leu  
20 25 30

Leu Glu Gln Lys Lys Gln Asp Arg Gly Glu Leu Lys Leu Leu Leu Leu  
35 40 45

Gly Pro Gly Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile  
50 55 60

Ile His Gly  
65

&lt;210&gt; 87

&lt;211&gt; 66

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Synthetic  
sequence

&lt;400&gt; 87

Met Gly Cys Thr Val Ser Thr Gln Thr Ile Gly Asp Glu Ser Asp Pro  
1 5 10 15

Phe Leu Gln Asn Lys Arg Ala Asn Asp Val Ile Glu Gln Ser Leu Gln  
20 25 30

Leu Glu Lys Gln Arg Asp Lys Asn Glu Arg Lys Leu Leu Leu Gly  
35 40 45

Ala Gly Glu Ser Gly Lys Ser Thr Ile Val Lys Gln Met Arg Ile Leu  
50 55 60

His Val  
65

<210> 88

<211> 66

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 88

Met Gly Cys Thr Val Ser Thr Gln Thr Ile Gly Asp Glu Ser Asp Pro  
1 5 10 15

Phe Leu Gln Asn Lys Arg Ala Asn Asp Val Ile Glu Gln Ser Leu Gln  
20 25 30

Leu Glu Lys Gln Arg Asp Lys Asn Glu Val Lys Leu Leu Leu Gly  
35 40 45

Ala Gly Glu Ser Gly Lys Ser Thr Ile Val Lys Gln Met Lys Ile Ile  
50 55 60

His Glu  
65

<210> 89

<211> 66

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 89

Met Gly Cys Thr Val Ser Thr Gln Thr Ile Gly Asp Glu Ser Asp Pro  
1 5 10 15

Phe Leu Gln Asn Lys Arg Ala Asn Asp Val Ile Glu Gln Ser Leu Gln  
20 25 30

Leu Glu Lys Gln Arg Asp Lys Asn Glu Val Lys Leu Leu Leu Gly  
35 40 45

Ala Gly Glu Ser Gly Lys Ser Thr Ile Val Lys Gln Met Lys Ile Ile  
50 55 60

His Glu  
65

<210> 90  
<211> 66  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 90  
Met Gly Cys Thr Val Ser Thr Gln Thr Ile Gly Asp Glu Ser Asp Pro  
1 5 10 15  
Phe Leu Gln Asn Lys Arg Ala Asn Asp Val Ile Glu Gln Ser Leu Gln  
20 25 30  
Leu Glu Lys Gln Arg Asp Lys Asn Glu Leu Lys Leu Leu Leu Gly  
35 40 45  
Pro Gly Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile  
50 55 60

His Gly  
65

<210> 91  
<211> 39  
<212> DNA  
<213> Saccharomyces cerevisiae

<220>  
<221> CDS  
<222> (1)..(39)

<400> 91  
tgg cat tgg ttg cag cta aaa cct ggc cag cct atg tac  
Trp His Trp Leu Gln Leu Lys Pro Gly Gln Pro Met Tyr  
1 5 10

39

<210> 92  
<211> 13  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 92  
Trp His Trp Leu Gln Leu Lys Pro Gly Gln Pro Met Tyr  
1 5 10

<210> 93  
<211> 39  
<212> DNA  
<213> Saccharomyces cerevisiae

<220>

&lt;221&gt; CDS

&lt;222&gt; (1)..(39)

&lt;400&gt; 93

tgg cat tgg ttg tcc ttg tgg ccc ggg cag cct atg tac 39  
Trp His Trp Leu Ser Leu Ser Pro Gly Gln Pro Met Tyr  
1 5 10

&lt;210&gt; 94

&lt;211&gt; 13

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 94

Trp His Trp Leu Ser Leu Ser Pro Gly Gln Pro Met Tyr  
1 5 10

&lt;210&gt; 95

&lt;211&gt; 39

&lt;212&gt; DNA

<213> *Saccharomyces cerevisiae*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(39)

&lt;400&gt; 95

tgg cat tgg ttg tcc ctg gac gct ggc cag cct atg tac 39  
Trp His Trp Leu Ser Leu Asp Ala Gly Gln Pro Met Tyr  
1 5 10

&lt;210&gt; 96

&lt;211&gt; 13

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 96

Trp His Trp Leu Ser Leu Asp Ala Gly Gln Pro Met Tyr  
1 5 10

&lt;210&gt; 97

&lt;211&gt; 39

&lt;212&gt; DNA

<213> *Saccharomyces cerevisiae*

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(39)

&lt;400&gt; 97

tgg cat tgg ttg acc ttg atg gcc ggg cag cct atg tac 39  
Trp His Trp Leu Thr Leu Met Ala Gly Gln Pro Met Tyr  
1 5 10

&lt;210&gt; 98

&lt;211&gt; 13



&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 98

Trp His Trp Leu Thr Leu Met Ala Gly Gln Pro Met Tyr  
1 5 10

&lt;210&gt; 99

&lt;211&gt; 39

&lt;212&gt; DNA

&lt;213&gt; Saccharomyces cerevisiae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(39)

&lt;400&gt; 99

tgg cat tgg ttg cag ctg tgg ggc cag cct atg tac  
Trp His Trp Leu Gln Leu Ser Ala Gly Gln Pro Met Tyr  
1 5 10

39

&lt;210&gt; 100

&lt;211&gt; 13

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 100

Trp His Trp Leu Gln Leu Ser Ala Gly Gln Pro Met Tyr  
1 5 10

&lt;210&gt; 101

&lt;211&gt; 39

&lt;212&gt; DNA

&lt;213&gt; Saccharomyces cerevisiae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(39)

&lt;400&gt; 101

tgg cat tgg ttg agg ttg cag tcc ggc cag cct atg tac  
Trp His Trp Leu Arg Leu Gln Ser Gly Gln Pro Met Tyr  
1 5 10

39

&lt;210&gt; 102

&lt;211&gt; 13

&lt;212&gt; PRT

&lt;213&gt; Saccharomyces cerevisiae

&lt;400&gt; 102

Trp His Trp Leu Arg Leu Gln Ser Gly Gln Pro Met Tyr  
1 5 10

&lt;210&gt; 103

&lt;211&gt; 39

&lt;212&gt; DNA

<213> *Saccharomyces cerevisiae*

<220>

<221> CDS

<222> (1)..(39)

<400> 103

tgg cat tgg ttg cgc ttg tcc gcc ggg cag cct atg tac  
Trp His Trp Leu Arg Leu Ser Ala Gly Gln Pro Met Tyr  
1 5 10

39

<210> 104

<211> 13

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 104

Trp His Trp Leu Arg Leu Ser Ala Gly Gln Pro Met Tyr  
1 5 10

<210> 105

<211> 39

<212> DNA

<213> *Saccharomyces cerevisiae*

<220>

<221> CDS

<222> (1)..(39)

<400> 105

tgg cat tgg ttg tgg ctc gtc ccg ggg cag cct atg tac  
Trp His Trp Leu Ser Leu Val Pro Gly Gln Pro Met Tyr  
1 5 10

39

<210> 106

<211> 13

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 106

Trp His Trp Leu Ser Leu Val Pro Gly Gln Pro Met Tyr  
1 5 10

<210> 107

<211> 39

<212> DNA

<213> *Saccharomyces cerevisiae*

<220>

<221> CDS

<222> (1)..(39)

<400> 107

tgg cat tgg ttg tcc ctg tac ccc ggg cag cct atg tac  
Trp His Trp Leu Ser Leu Tyr Pro Gly Gln Pro Met Tyr  
1 5 10

39

<210> 108  
<211> 13  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 108  
Trp His Trp Leu Ser Leu Tyr Pro Gly Gln Pro Met Tyr  
1 5 10

<210> 109  
<211> 39  
<212> DNA  
<213> Saccharomyces cerevisiae

<220>  
<221> CDS  
<222> (1)..(39)

<400> 109  
tgg cat tgg ttg cgg ctg cag ccc ggg cag cct atg tac 39  
Trp His Trp Leu Arg Leu Gln Pro Gly Gln Pro Met Tyr  
1 5 10

<210> 110  
<211> 13  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 110  
Trp His Trp Leu Arg Leu Gln Pro Gly Gln Pro Met Tyr  
1 5 10

<210> 111  
<211> 62  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 111  
Arg Ile Asp Thr Thr Gly Ile Thr Glu Thr Glu Phe Asn Ile Gly Ser  
1 5 10 15

Ser Lys Phe Lys Val Leu Asp Ala Gly Gly Gln Arg Ser Glu Arg Lys  
20 25 30

Lys Trp Ile His Cys Phe Glu Gly Ile Thr Ala Val Leu Phe Val Leu  
35 40 45

Ala Met Ser Glu Tyr Asp Gln Met Leu Phe Glu Asp Glu Arg  
50 55 60

<210> 112  
<211> 62  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 112

Arg Val Leu Thr Ser Gly Ile Phe Glu Thr Lys Phe Gln Asn Asp Lys  
1 5 10 15

Val Asn Phe His Met Phe Asp Val Gly Gly Gln Arg Asp Glu Arg Lys  
20 25 30

Lys Trp Ile Gln Cys Phe Asn Asp Val Thr Ala Ile Ile Phe Val Val  
35 40 45

Ala Ser Ser Ser Tyr Asn Met Val Ile Arg Glu Asp Asn Gln  
50 55 60

<210> 113

<211> 62

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 113

Arg Val Lys Thr Thr Gly Ile Val Glu Thr His Phe Thr Phe Lys Asp  
1 5 10 15

Leu His Phe Lys Met Phe Asp Val Gly Gly Gln Arg Ser Glu Arg Lys  
20 25 30

Lys Trp Ile His Cys Phe Glu Gly Val Thr Ala Ile Ile Phe Cys Val  
35 40 45

Ala Leu Ser Ala Tyr Asp Leu Val Leu Ala Asp Glu Glu Met  
50 55 60

<210> 114

<211> 62

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 114

Arg Val Lys Thr Thr Gly Ile Val Glu Thr His Phe Thr Phe Lys Asp  
1 5 10 15

Leu Tyr Phe Lys Met Phe Asp Val Gly Gly Gln Arg Ser Glu Arg Lys  
20 25 30

Lys Trp Ile His Cys Phe Glu Gly Val Thr Ala Ile Ile Phe Cys Val  
35 40 45

Ala Leu Ser Asp Tyr Asp Leu Val Leu Ala Glu Asp Glu Glu  
50 55 60

<210> 115

<211> 62

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 115

Arg Val Lys Thr Thr Gly Ile Val Glu Thr His Phe Thr Phe Lys Asn  
1 5 10 15

Leu His Phe Arg Leu Phe Asp Val Gly Gly Gln Arg Ser Glu Arg Lys

20

25

30

Lys Trp Ile His Cys Phe Glu Asp Val Thr Ala Ile Ile Phe Cys Asn  
35 40 45

Ala Leu Ser Gly Tyr Asp Gln Val Leu His Glu Asp Glu Thr  
50 55 60

&lt;210&gt; 116

&lt;211&gt; 62

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 116

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Glu Asn  
1 5 10 15

Ile Ile Phe Lys Met Val Asp Ala Gly Gly Gln Arg Ser Glu Arg Lys  
20 25 30

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val  
35 40 45

Ala Leu Ser Glu Tyr Asp Gln Cys Leu Glu Glu Asn Asn Gln  
50 55 60

&lt;210&gt; 117

&lt;211&gt; 62

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 117

Arg Met Pro Thr Thr Gly Ile Asn Glu Tyr Cys Phe Ser Val Gln Lys  
1 5 10 15

Thr Asn Leu Lys Ile Val Asp Ala Gly Gly Gln Arg Ser Glu Arg Lys  
20 25 30

Lys Trp Ile His Cys Phe Glu Asn Ile Ile Ala Leu Ile Tyr Leu Ala  
35 40 45

Ser Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn  
50 55 60

&lt;210&gt; 118

&lt;211&gt; 25

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> The 5'-end of this sequence is linked to the  
3'-end of SEQ ID NO: 21 by (NNN) where n is any  
chosen integer

&lt;220&gt;

<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 118  
agcttctgcc tcacgcttaa gtagc

25

<210> 119  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> The 5'-end of this sequence is linked to the  
3'-end of SEQ ID NO: 25 by (NNN) where n is any  
chosen integer

<220>  
<223> Description of Artificial Sequence: Synthetic  
sequence

<400> 119  
gttgctcttc ttttcactcg agtacc

26

<210> 120  
<211> 9  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 120  
Leu Leu Leu Leu Gly Ala Gly Glu Ser  
1 5

<210> 121  
<211> 9  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 121  
Leu Glu Lys Gln Arg Asp Lys Asn Glu  
1 5

<210> 122  
<211> 6  
<212> PRT  
<213> Saccharomyces cerevisiae

<220>  
<221> VARIANT  
<222> 2,4,5  
<223> Xaa may be any amino acid

<400> 122  
Gly Xaa Gly Xaa Xaa Gly  
1 5

<210> 123  
<211> 10  
<212> PRT  
<213> Saccharomyces cerevisiae

&lt;400&gt; 123

Leu Leu Leu Leu Gly Ala Gly Glu Ser Gly  
1 5 10

&lt;210&gt; 124

&lt;211&gt; 6

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;220&gt;

&lt;221&gt; VARIANT

&lt;222&gt; (3)...(6)

&lt;223&gt; Xaa may be any amino acid

&lt;400&gt; 124

Met Gly Xaa Xaa Xaa Ser  
1 5

&lt;210&gt; 125

&lt;211&gt; 9

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 125

Gly Ser Gly Glu Ser Gly Asp Ser Thr  
1 5

&lt;210&gt; 126

&lt;211&gt; 8

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 126

Gln Ala Arg Lys Leu Gly Ile Gln  
1 5

&lt;210&gt; 127

&lt;211&gt; 9

&lt;212&gt; PRT

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 127

Leu Ile His Glu Asp Ile Ala Lys Ala  
1 5

&lt;210&gt; 128

&lt;211&gt; 7

&lt;212&gt; DNA

<213> *Saccharomyces cerevisiae*

&lt;400&gt; 128

tgaaaca

&lt;210&gt; 129

<211> 10  
<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 129  
Leu Leu Leu Leu Gly Ala Gly Glu Ser Gly  
1 5 10

<210> 130  
<211> 8  
<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 130  
Leu Leu Leu Leu Gly Ala Gly Glu  
1 5

<210> 131  
<211> 6  
<212> DNA  
<213> *Saccharomyces cerevisiae*

<400> 131  
gaggct

6

<210> 132  
<211> 4  
<212> DNA  
<213> *Saccharomyces cerevisiae*

<400> 132  
gaga

4

<210> 133  
<211> 11  
<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 133  
Tyr Ile Ile Lys Gly Val Phe Trp Asp Pro Ala  
1 5 10